

Antimicrobial substances in urine of patients attending department of genitourinary medicine

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SUMMARY The prevalence of antimicrobial substances in the urine of new patients attending a genitourinary department and patients reattending with a new condition (rebook patients) was 4.1% (33 of 812 patients). Only 17 of 33 patients (52%) found to have an antimicrobial in the urine declared their antimicrobial intake at their initial physician interview and examination. The presence of antimicrobial substances had little influence on the diagnosis or management of patients.

Introduction

Patients attending departments of genitourinary medicine are routinely asked about current or recent ingestion of antimicrobial agents. For various reasons, some patients fail to disclose their recent use of an antimicrobial agent, and verification of a patient's history is usually impossible. Patients may fail to disclose other information relevant to the diagnosis and management of sexually transmitted diseases (STD), and Ross has recently measured the non-admission of homosexual orientation.¹

This study determines the prevalence of antimicrobial agents in the urine of new and reattending (rebook) patients at a department of genitourinary medicine, using a recently described microbiological method.²

Patients and methods

STUDY POPULATION

Patients making their first visit to the genitourinary department at the General Infirmary at Leeds and

those reattending with a new complaint more than three months after resolution of a previous infection (rebook patients) were studied. During an initial study in July to August 1984 the urine of 606 unselected new and rebook patients (264 men and 342 women) was screened for antimicrobial substances. This sample represented 66% of eligible women and 31% of eligible men attending during the study. A further 206 men were screened during a second study in January to February 1985, this sample again comprised 31% of eligible male patients. A full clinical history was noted in each case. Patients were specifically asked if they were currently taking, or had recently taken, any medication, particular reference being made to antimicrobial agents. All patients underwent a full genital examination and testing for STD.

Non-acidified urine samples from men and women were stored without preservative at 4°C until transported to the laboratory, where processing was carried out within 24 hours. The method used to detect and identify antimicrobial substances in the urine has been described in detail previously.² Specimens of urethral, endocervical, and rectal material, where indicated, were examined for *Neisseria gonorrhoeae* by Gram stained smear and culture on modified New York City medium. Urethral and cervical swabs for culture for *Chlamydia trachomatis* were placed in 0.2 mol/l sucrose phosphate transport medium and refrigerated at 4°C until inoculation on to cyclohexamide treated McCoy cells within 24 hours. After 48 hours' incubation the cell layers were examined for

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typical inclusions using Giemsa stain.

The χ^2 test with Yates' correction, or Fisher's exact test, were used in statistical comparisons.

Results

PREVALENCE OF ANTIMICROBIAL SUBSTANCES

In the first study period 12 of 342 women (3.5%) and 10 of 264 men (3.8%) were found to have an antimicrobial substance in their urine. An antimicrobial agent was present in the urine of 11 of 206 men (5.3%) in the second study period. The difference in prevalence between the two study periods among the men and the difference in prevalence between the genders were not significant. The overall prevalence of antimicrobial agents in the urine was 4.1%. Rebook patients comprised 45% of the men and 42% of the women studied. The prevalence of antimicrobial agents in new and rebook patients was not significantly different. All patients disclosing antimicrobial use on the day they attended the department had positive urine tests.

IDENTIFICATION OF ANTIMICROBIALS

All the antimicrobial substances detected were present in sufficient concentration to permit confident identification. Table I shows the distribution of

TABLE I Identification of antimicrobial substances detected

Antimicrobial	Men (n = 21)	Women (n = 12)	Total (n = 33)
Penicillin/Ampicillin/ Amoxycillin	2	7*	9
Tetracycline	13†	3	16
Cotrimoxazole/Trimethoprim	4	1	5
Erythromycin	1	1	2
Cephalosporin	1	0	1

*p = 0.009; †p = 0.04.

antimicrobial substances. A penicillin was present significantly more often in women than in men (p = 0.009), and a tetracycline was found significantly more often in men than in women (p = 0.04).

RELIABILITY OF DRUG HISTORY

Of the 21 men found to have an antimicrobial in their urine only eight (38%) disclosed recent antimicrobial use to the examining physician. Nine of the 12 women (75%) with positive urine findings disclosed current antimicrobial use. This gender difference was not significant.

INFLUENCE ON DIAGNOSIS

The diagnoses of the 33 patients found to have an antimicrobial substance in the urine were compared with those of the 779 patients with negative urine tests (table II). There was no significant difference between the two groups in any diagnostic category.

The isolation of *C. trachomatis* however, was significantly reduced (p = 0.01) in those found to have taken a tetracycline. Table III shows the influence of penicillin and tetracycline on the isolation of bacterial pathogens.

Discussion

Urine tests for drugs, or their metabolites, have previously proved useful in antimicrobial compliance studies^{3,4} and in the assessment of the reliability of a patient's drug history.⁵ The main limitation of the method used in this study for verifying a drug history is that it only detected a substance taken within a limited period before the urine sample was given, usually less than 24 hours. This method does, however, show that the prevalence of antimicrobial substances in the urine of new and rebook patients attending a genitourinary department is low (4.1%). A considerably higher prevalence of antimicrobial substances (284 of 1514 specimens (18.7%)), was found in urine specimens received by the department of microbiology at Leeds from general practitioner cases of suspected urinary tract infection.²

Roughly half (48%) of those found to have an antimicrobial agent in the urine denied taking such a drug in a routine physician interview. The proportion of new and rebook patients denying antimicrobial use was similar. A high denial rate has been found by others in the context of analgesic use.⁵ Ross¹ has shown that some patients deny a homosexual source of infection because they anticipate a negative response from the physician if such information were to be disclosed. Similar reasoning might prevail in the denial of antimicrobial use by some patients, particularly if they are aware that antimicrobials could influence the detection of STD. In this study the source of the antimicrobial substance and the reason for its use seemed important in determining non-admission. Patients taking an antimicrobial substance prescribed by a physician for a concurrent condition (notably acne vulgaris, tonsillitis, or cystitis) readily disclosed the fact, and 15 of the 17 patients declaring antimicrobial use were in this category. Those patients who, on their own initiation, had taken a few antimicrobial tablets, perhaps left over from some previous course of treatment, tended to be those who initially denied antimicrobial use. Some patients were challenged with the urine findings at follow up attendances, and all those challenged admitted taking "some tablets". They had usually done so at the onset

TABLE II *Influence of presence of antimicrobials on diagnosis (figures are number (%) of patients)*

Principal Diagnosis	Men		Women	
	Antimicrobial present	Antimicrobial absent	Antimicrobial present	Antimicrobial absent
Gonorrhoea	2 (10)	63 (14)	1 (8)	55 (17)
Non-specific genital infection	8 (38)	192 (43)	5 (42)	100 (30)
Genital herpes	2 (10)	25 (6)	1 (8)	12 (4)
Trichomoniasis			2 (17)	21 (6)
Genital warts	1 (5)	34 (8)	1 (8)	18 (5)
Candidosis		15 (3)	1 (8)	44 (13)
Other conditions	8 (38)	120 (27)	1 (8)	80 (24)
Total	21	449	12	330

TABLE III *Influence of penicillin and tetracycline on isolation of Neisseria gonorrhoeae and Chlamydia trachomatis (figures are numbers (%) of patients)*

Diagnosis	Penicillin present	Tetracycline present	No of antimicrobial agents
Gonorrhoea	1 (11)	1 (6)	118 (15)
Chlamydial non-specific genital infection	3 (33)	0*	127 (16)
Non-Chlamydial non-specific genital infection	4 (44)	8 (50)	165 (21)
Other diagnoses	1 (11)	7 (44)	369 (47)
Total	9	16	779

*p = 0.011

of symptoms or on hearing that a sexual partner had an infection, in the hope of being spared a visit to a genitourinary clinic.

Consideration of the clinical and microbiological findings in those patients who had taken an antimicrobial agent suggests that these agents had little influence on diagnosis. Notably, those patients who attended the department after taking an antimicrobial substance for genitourinary symptoms were still symptomatic and had clearly not received appropriate treatment in terms of dosage or type of drug to cure their symptoms. It is not surprising, therefore, that diagnosis of these patients' infections was still possible. Very small doses of an antimicrobial have been shown to cure urinary tract infections.⁶ Some genital tract infections may also respond to small doses of antimicrobial agents, and the number of patients who successfully treat themselves is unknown.

The low prevalence of antimicrobial use in new and rebook patients attending a genitourinary department and the lack of influence these agents seemed to have on diagnosis suggest that routine screening of these patients for antimicrobial drugs is not worthwhile.

Should there be individual cases where verification of a patient's drug history is desirable, the method of urine testing we used proved to be simple and convenient.

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